



NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

400 MARYLAND AVENUE, SW, WASHINGTON, D. C. 20546

TELEPHONES: WORTH 2-4155 ----- WORTH3-6925

FOR RELEASE: WEDNESDAY, IMMEDIATE
March 25, 1964

RELEASE NO: 64-67

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NASA TO EVALUATE SITES IN BOSTON FOR ERC

Appointment of a committee to evaluate potential sites in the Greater Boston area for the recently approved Electronics Research Center was announced today by Dr. Hugh L. Dryden, Deputy Administrator of the National Aeronautics and Space Administration.

The Center is being formed to give NASA the technical competence needed to establish within industry and universities an electronics research program needed for pre-eminence in space, and to provide project managers with technical support similar to that now available in other areas such as propulsion, aerodynamics and vehicle systems.

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First task of the six-man Site Evaluation Committee will be to draw up a proposed plan for criteria and procedures to be used in carrying out the evaluation. Some of the factors to be considered by the Committee in developing criteria for the site include:

- Proximity to educational institutions offering graduate courses at the doctorate level in electrical engineering and physics, and which have an environment of successful electronics research;
- Proximity to industrial firms engaged in electronics research;
- Engineering considerations affecting construction costs; and
- Problems relating to electronics interference.

After the criteria have been formulated, the Committee will begin an evaluation of proposed sites leading to the preparation of a final report.

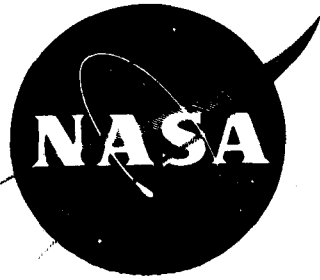
Members of the committee represent specialties in electronics research, administration and facilities planning. Col. R. P. Young, Executive Officer, NASA Headquarters, has been appointed Chairman of the group.

Other members are: Ralph E. Ulmer, Director, Review and Analysis, Office of Construction; Anthony Minichiello, Electronics Research Task Group, Office of Advanced Research and Technology; and Dr. John M. Walker, Chief, Communications and Tracking, OART, all from NASA Headquarters; Harold Crate, Head Facilities and Models Branch, NASA Langley Research Center; and James B. Cahalane, Ass't. Director for Regional Development, NASA North Eastern Office, Cambridge, Mass., Secretary.

The committee will consider those potential sites in the Greater Boston area which have been proposed to NASA as well as any other sites in that area which, in its judgment, merit attention.

Correspondence for the committee should be addressed to the Secretary, ERC Site Evaluation Committee, NASA North Eastern Office, 30 Memorial Drive, Cambridge 42, Mass.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

400 MARYLAND AVENUE, SW, WASHINGTON, D. C. 20546

TELEPHONES: WORTH 2-4155 ----- WORTH3-6925

FOR RELEASE:

ON DELIVERY

8:00 P.M.

Wednesday, May 20, 1964

Address

by

James E. Webb, Administrator

National Aeronautics and Space Administration

ARMED FORCES COMMUNICATIONS AND ELECTRONICS ASSOCIATION

Washington, D. C.

May 20, 1964

* * *

Highlights of NASA Communications and Electronics Programs

With the most advanced commercial system on earth, the United States is exchanging greater numbers of commodities, in terms both of products and of ideas, than any nation in history--and it is exchanging these products and ideas in virtually every corner of the world. As a measure of our specialization and division of work, we spend more than \$100 billion a year--or more than a fifth of our Gross National Product--on transportation alone.

Also of central importance to our nation's commercial activity, and to the efficiency and progress of our economic life, our national defense, and other government activities, is communications.

Since 1950, private and federal expenditures for communications of all types have more than doubled--from \$4.5 billion in 1950 to \$11.5 billion in 1962, the most recent year for which figures are available. As our economy grows and

changes, efficient resource allocation and use makes for an increasing proportion of GNP devoted to communications. New processes, new markets, new products and increased turnover rates of both inventories and working capital require this.

At the National Aeronautics and Space Administration, it has been estimated that about 40 percent of our booster costs, 70 percent of our major spacecraft dollars, and 90 percent of our tracking and data acquisition funds go into electronics. Unfortunately, as Dr. Albert Kelley--known to all of you--recently pointed out in this same context, a vast majority of our flight failures, not to mention flight delays, arise from electronic failures. Success in this area is obviously a major factor in over-all mission accomplishment.

NASA's principal commodity is knowledge, and the know-how in the use of knowledge which we sometimes call technology. We use this knowledge through a vast network of contracts with industry to develop and use space systems. However, the agency also performs a service to U.S. commercial activity by communicating knowledge, and by developing improved ways of increasing the utilization of space technology generally.

NASA has established programs to make available useful scientific and technological knowledge from both its earth laboratories and its space exploration experiments as rapidly as possible to interested segments of the economy.

All of us here today are closely concerned with the problems of communications. The broad outline of our progress in space electronics during the past five and a half years, particularly in the areas of miniaturization and improved reliability, is thoroughly familiar to you. However, I think it will be worthwhile to look briefly at the space program and the role that information systems, and specifically, electronic systems, play.

To begin with, launch vehicles and spacecraft are controlled, stabilized, guided, and tracked electronically. The spacecraft, once in orbit, perform their missions with electronic devices that may be likened to the brains, nerves and senses of living creatures. They gather scientific information, process it, and transmit it back to earth by electronic means. Our ground stations receive the information, record it, and analyze it, again electronically.

It can be truthfully said that our present space program could not possibly have been accomplished without electronics.

The satellite is the first truly unlimited tool in the history of mankind. In the past, there have always been limitations of one kind or another: air, water, national boundaries, fuel capacities, and a host of others. With the scientific or weather or communications satellite, all these boundaries and limitations disappear. One of the great tasks ahead is to find ways to use this tool to serve mankind and provide stable conditions for economic, social, and political growth.

Already, we are harvesting many benefits from space technology, this new ability to move outward from the earth, and from laboratory science to exploratory science. As our spacecraft continue to take literally thousands of synoptic measurements of various phenomena in space, patterns are beginning to emerge that have previously been unobtainable and unmeasurable.

For example, we have been doing much research on the energy system of the sun, and are constantly increasing our knowledge about the energy system of the earth's atmosphere and possible inter-relations. As Dr. Homer Newell, Associate Administrator for NASA's Office of Space Sciences and Applications, has pointed

out, "The artificial earth satellite not only is able to extend the observations of the earth's atmosphere to its outer edges and beyond, but also permits measurements to be made over long periods of time and over a wide range of geographical positions...the satellite is an excellent platform for detailed study of the geomagnetic field and related phenomena such as the radiation belt, the aurora, the influence of solar activity on the earth, hydromagnetic waves, and the ionosphere."

With devices such as our Orbiting Solar Observatories, our investigators are learning to observe the electromagnetic and particle spectra of the sun, to measure the energy content therein, to determine the altitudes at which different wave length bands are absorbed in the atmosphere, and to study the manner in which different particle components interact with the radiation belt. In this way, we are determining the driving forces that give rise to various weather phenomena, atmospheric circulations, variations in upper atmospheric structure, ionospheric and magnetic field activity, auroral displays, and radio disturbances.

In space activity the United States is now at the mid-point of a 10-year program. It might be said, in a sense not entirely figurative, that we have reached the "mid-course maneuver point." Just as the Mariner II Venus fly-by mission would have missed by almost a quarter of a million miles instead of coming within the 22,000-mile target area, we can fail to achieve our full potential if we do not seize every opportunity to correct our course as we go along.

It is particularly important to avoid the kind of mistake typified by the early manufacturers of automobiles during the period when they were still called horseless carriages. These revolutionary vehicles continued to be equipped with

whip sockets long after there had ceased to be a practical need for buggy whips.

As one specific example, I might mention the continuing need to re-examine our traditional complex circuitry and closely scrutinize the underlying logic. In the rapidly evolving new technology of solid-state physics and electronics, we must take care that we are not being hindered by self-imposed limitations of old circuit theory and wiring diagrams.

We are all well aware that available electronics equipment is marginal or inadequate for many current and future space programs. The reasons for this are not hard to find. Most of the equipment available today stems from commercial or military technology. The requirements for which they were designed, difficult as they were and are, seem mild in comparison with those demanded for long-time reliable operation in the severe environment of space.

Instead of the electronics components developed in accordance with present military specifications which will operate with reliability at temperatures up to 165°F, we need research to get components for future space missions to withstand temperatures of even thousands of degrees.

The field of space electronics is still very new. We have no off-the-shelf supply of proven components, techniques, and practices that can be used to build increasingly complex operational systems. Further, there is small chance that they will be developed in a natural evolutionary process. Electronic components and systems designed for space represent a limited market. There is often no driving incentive for industrial firms to make the heavy investment in research and development that is required to provide them.

Missions now planned will require trouble-free operation for periods of two years or longer in the hostile space environment. There is need for research into the basic mechanism of electronic failure, in order to develop more reliable, longer-lived parts. Also required is across-the-board research to qualify and standardize electronic components for use in present and future space systems.

To help meet the needs and demands of the increasingly difficult space missions of the future, NASA is taking steps to establish an Electronics Research Center in greater Boston, to which Congress gave its approval in March. This Center will be responsible for the important and difficult task of coordinating electronics research--as it now exists in government, universities, and industry--and drawing upon this existing base, by dealing with technical societies, with universities and non-profit organizations, with industry, and with the Department of Defense.

The Center will provide a focal point for expanding efforts of university and non-profit research organizations to get some of the best brains in the nation working on space electronics. It will also make use of outstanding individuals throughout the nation to plan its program, and of local universities for consulting work and to broaden the base of education of its scientists and engineers.

Center-industry relationships will be established to help plan and make research requirements known, and it is expected that industrial contracts will be let for much of the research program, so that the Center's in-house facilities will not have to be unduly large.

There will be day-to-day communication with DOD and other laboratories doing electronics work, to make common use of specialized facilities and to avoid duplication of effort.

A highly important aspect of the Electronics Research Center will be its ability to furnish consultative services, on request, to the on-going projects. As the Center grows in facilities and personnel, it will undoubtedly place more and more emphasis on electronic problem areas. The build-up of the Center will take place at the most rapid rate consistent with the development of a competent, well-organized staff and effective relationships with those having research competence, in universities, in industry and in other organizations. We estimate that it will take four to five years to reach our present goal of 2,100 people. Of these, about 700 will be in the professional group of scientists and engineers.

If our emerging capabilities in space, and the university and industry base on which they are built, are to yield the greatest benefits for our nation and for the world, it is essential to make a breakthrough in the electronics area. At the same time, we must keep constantly before us the fact that the research and development programs of government--as specialized as some parts of it are--constitutes a great storehouse of fresh scientific knowledge and technological know-how.

Both are a national resource, paid for by the public. Both must be put to the fullest possible economic use.

The space program, operating as it must at the leading edge of technology, offers unique opportunities for a broader utilization of new devices and

processes, and for overcoming the traditional lag in the application of such advances. It is the rule, rather than the exception, that some advances, either in products or in general technological skill, are found in almost every aspect of the NASA program. But whether arising from the space effort or from other research efforts, the technological revolution of our time is the touchstone of continuing national progress and the door to a future for America that I believe will dwarf anything this country has ever before experienced.

Ralph Cordiner, who retired as Chairman of the Board of General Electric last December, saw the portent and the promise of the new technology to the industrial community quite clearly, at a time when our present fast-moving space program was--quite literally--scarcely off the ground. In a speech delivered at the University of California in Los Angeles four years ago (May 4, 1960), Mr. Cordiner said, and I quote:

"The space frontier will inevitably increase the scale of thinking and risk-taking by business. When we are dealing with space, we are dealing with a technology that requires a planetary scale to stage it, decades of time to develop it, and much bigger investments to get across the threshold of economic return than is customary in business today. Business must now think in international terms and in terms of the next business generation. It must step up to the big risks with the same vision that enabled an earlier generation of builders to push railroad tracks out across the wilderness and lay the foundations of our modern economy."

This is the challenge we face. The prospect of pushing forward the frontiers of scientific discovery, and the conversion of the knowledge gained to

practical use, touches not only our progress in space but every aspect of our national life. The wisdom with which we take the necessary steps to develop and use our scientific and technical resources may well determine our ability to survive and prosper and lead.

In a call to action and achievement in space, President Johnson said not long ago:

"We are reaping a bountiful harvest from the vision of those who urged that America move forward with vigor in the exploration of space... Because of them we shall live in a new and wondrous world. Our purpose in space is both realistic and responsible--just as it is also peaceful. I call today for our leading space scientists and engineers to rededicate their efforts to this national purpose."

The President's call was to all of us, in business, industry, government, the university community, and all others who are participating, directly or indirectly, in the national space effort.

In NASA we are doing all we can to respond with vision, creativeness, and enthusiasm. At this mid-course maneuver point of the present 10-year program, electronic advances are clearly the keys to the doors of the future. In the early days of the space age, propulsion problems were at the center of the stage. The spotlight is now and will be for some time to come on the area which you have chosen for your own--electronics. I know the performance will be outstanding.

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AUG 7 1964

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NEWS NASA

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

TELS. WO 2-4155
WO 3-6925

FOR RELEASE:

RELEASE NO. 64-199

IMMEDIATE
August 4, 1964

KELLEY APPOINTED
DEPUTY DIRECTOR
OF ELECTRONICS CENTER

Dr. Albert J. Kelley, Director of Electronics and Control Division of NASA's Office of Advanced Research and Technology, has been named Deputy Director of the new Electronics Research Center, which will be established soon in the Greater Boston area. Dr. Kelley will be deputy to Dr. Winston Edward Kock, whose selection as Director was announced last month. Both appointments are effective September 1.

The Center will operate under the program supervision of Dr. Raymond L. Bisplinghoff, NASA Associate Administrator for Advanced Research and Technology.

"I am very pleased to make this announcement," Dr. Bisplinghoff said. "Dr. Kelley has had an outstanding career as a naval officer and has demonstrated exceptional leadership as a research scientist and manager in the field of electronics. His ability, experience and knowledge of our agency will furnish extremely valuable support to Dr. Kock."

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Dr. Bisplinghoff recalled that Kelley established the NASA's research program in electronics and control when he was assigned in November, 1961, to form the division he now directs at NASA Headquarters. He recruited the professional staff of the division and organized the research program, which now has an operating budget over \$35 million. The program is concerned with research into all aspects of electronics and control systems, including guidance, communications, navigation, instrumentation, data processing and stabilization and control of aeronautical and space vehicles.

Dr. Kelley will continue as Director of the Electronics and Control Division until a successor is named.

Dr. Kelley joined the NASA staff in March, 1960 to establish a development program for the Agena launch vehicle. Following a short period in the Office of Programs, he was named to his present position.

In early 1963, he was appointed Manager of the Electronics Research Task Group, which formulated the plans for the Electronics Research Center. He headed the preparation of the final report by the agency on the need for the Center.

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FOR RELEASE: TUESDAY, 3:00 P.M.
December 8, 1964

RELEASE NO: 64-307

Released simul-
taneously at NASA
ERC, Cambridge &
New England Div.,
Corps of Engineers,
Waltham, Mass.

ARCHITECT ENGINEERING FIRM

SELECTED FOR NASA'S

ELECTRONICS RESEARCH CENTER

Contract

The U. S. Army Corps of Engineers and the National Aeronautics and Space Administration announced today the award of a contract for master planning of NASA's \$60 million Electronics Research Center to the joint venture firms of Edward Durell Stone, New York City; Giffels and Rossetti, Detroit; and Charles A. Maguire Associates, Boston-Providence.

The announcement was made by Brig. Gen. Peter C. Hyzer, Division Engineer, U. S. Army Corps of Engineers, New England, and Dr. Winston E. Kock, Director of the Center.

The contract was awarded by the New England Division of the Corps of Engineers which has been designated by the Electronics Research Center as NASA's design and construction agent for the buildings to be located on a 29 acre site at Kendall Square, Cambridge.

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12/8/64

The architect-engineers will execute site utilization studies, synthesis of functional operations, preliminary layout, definition of architecture and materials of construction, conceptual drawings, cost estimates, and a model of the entire complex. The A/E firm must complete the assignment within 24 weeks.

Research facilities planned at the Center, in addition to an engineering and administration building, are 10 laboratories devoted to the investigation of advanced electronic systems for space.

Separate contracts for design and construction of various elements of the Center will be awarded later as planning of the Center advances. Construction of the above facilities is planned over five fiscal years beginning in 1965.

Examples of Edward Durell Stone architectural works are to be found in the United States and overseas. They include the Pakistan Institute of Nuclear Science and Technology; the new 10,000 student State University at Albany, N.Y.; New York City Civic Center Development; Radiological Laboratory at Trombay, India; U. S. Embassy, New Delhi, India; and the National Geographic Society Building, Washington, D.C.

Giffels and Rossetti, Inc. has been active in the space program, particularly in the design of laboratories and missile pads. Their work includes such installations as the Space Radiation Effects Laboratory, at Langley Research Center; Los Alamos Scientific Laboratory, New Mexico, and the NASA Project Apollo pads "A" and "B" at Cape Kennedy.

Charles A. Maguire and Associates have designed, among other projects, Deep Freeze II in the Antarctic, a complete underground installation, and the first fully automated U.S. Post Office at Providence, R.I. In addition, the firm has performed extensive site development work and major programs for highways, water, sewage and other public utilities in New England and elsewhere.

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RELEASE NO: 65-31

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 491-1500, EXT. 227-228

FOR RELEASE: IMMEDIATELY
AUGUST 17, 1965

NASA GIVES GO-AHEAD

FOR DETAIL DESIGNS

FOR ERC BUILDINGS

The National Aeronautics and Space Administration has authorized architects to proceed with detail designs for a 26-story tower building, a three-story microwave laboratory and an auditorium-cafeteria building at the Electronics Research Center, Cambridge, Mass.

The announcement was made today by Dr. Winston E. Kock, Director of the Center. Construction of the three buildings is expected to begin next Spring, provided approval is given for urban renewal proceedings in the Kendall Square, Cambridge site.

The first three buildings, including the tower structure, will be built with \$15 million in funds already approved by Congress for construction of the Center. Total cost of the Center has been estimated at \$60 million.

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In addition, Dr. Kock said the space agency has authorized the start of advance planning for additional laboratory and administration facilities within the site, including a second 26-story tower.

The high rise-low rise design concept was proposed for NASA by the architectural team of Edward Durell Stone, Giffels and Rossetti, and Charles A. Maguire Associates.

The 378-foot tower will be built with pre-cast concrete panels on reinforced concrete frame and will be 84 feet square. It will have a basement, lobby floor, 22 laboratory floors and three floors of machinery. The building will house the Center's Qualification & Standards Laboratory and the Electronic Components Laboratory, and a portion of the Engineering and Administration Functions.

The three-story Microwave Laboratory building to the east of the tower building will have special design facilities, including a 17-foot high basement for special purpose laboratory equipment.

The auditorium building will be constructed south of the tower and will have a 350 seating capacity. Below the auditorium will be a basement cafeteria. All three buildings will be connected by corridors at the basement level.

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Dr. Kock said the site will be appropriately landscaped and will provide a highly attractive addition to the area.

"We are pleased that plans are moving along toward the construction of the Center," Dr. Kock said, "because we feel that the Center will perform a vital function in our nation's exploration of space.

"Our chief mission is to supervise and conduct a nationwide electronics research program that will lead us to new concepts, components and systems needed to take us to new and bolder ventures in space and aeronautics."

The Center presently is operating in temporary headquarters at 575 Technology Square, a few hundred yards from the planned construction site. It currently has a staff of 260 and is planned to grow to 2100 scientists, engineers, and other employees. As space becomes available in the permanent buildings, equipment and personnel will be transferred. Since it was established last September, the Center has allocated more than \$2.5 million in research grants and contracts to the nation's industries and educational institutions and plans to allot \$5 million for this purpose in Fiscal Year 1966.

Chief of Construction for the Center is Joseph A. Vitale of Lincoln, Mass., who is Assistant Director of Facilities

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and Engineering at the Center. Design and construction agent for NASA is the New England Division, Army Corps of Engineers, under the supervision of Brig. Gen. Robert R. Ploger, Division Engineer, and John Leslie, Chief of the Engineering Division.

The Kendall Square site is bounded by Broadway, Third Street, Binney Street and tracks of the Boston and Albany Railroad, exclusive of property owned by the Cambridge Gas & Electric Co. It contains 29.2 acres proposed for the NASA facility.

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FOR RELEASE: AM TUESDAY
DECEMBER 7, 1965
ALSO RELEASED IN CAMBRIDGE, MASS.

RELEASE NO: 65-373

"HOT ELECTRONS"
EXPERIMENTS
SHOW PROMISE

A promising advance in microwave research is indicated by experiments with "hot electrons" being carried out by scientists at the National Aeronautics and Space Administration's Electronic Research Center (ERC), Cambridge, Mass.

The investigations are being made in the Components Technology Laboratory, which is under the direction of Dr. W. Crawford Dunlap, an Assistant Director of the center.

Higher frequency microwaves have been generated at the Center by means of a phenomenon recently discovered by J. B. Gunn of International Business Machines. The microwaves are produced by interaction of "hot electrons" in solid state component material.

The technique is concerned with a crystal (bulk gallium arsenide semi-conductor material) used in transistors and lasers. A low voltage is applied across the crystal which is less than one-thousandth of an inch thick. A conversion of direct current to continuous wave microwave power was achieved by the scientists at frequencies as high as 12 kilo-megacycles

(or thousand-million cycles) per second. This is believed to be twice as high as any previously achieved.

The advance was made by Dr. Harold Roth, Chief of the ERC Advanced Research Branch, and two associates, W. Deter Straub and John A. Ayer. Their basic electrophysics research work is in the programs of NASA's Office of Advanced Research and Technology.

Microwaves are useful in long-distance communications because they can be aimed more precisely than lower frequencies. The new results by Roth and his associates appear promising for future spacecraft transmitters because they are expected to improve the efficiency of microwave signal transmission in space.

Dr. Winston E. Kock, Director of ERC, said weak signals from space are difficult to process into useful form without highly complex equipment. Most microwave transmitters are still of the vacuum tube type because transistors are inadequate at these frequencies. If the vacuum tubes can be replaced with solid state generators a significant improvement in efficiency may again be possible.

"One of the goals of the work of this Center," Kock said, "is to discover and interpret electrical, physical and chemical phenomena which may lead to new methods of generating and controlling energy and information for future space and aeronautical applications."

NEWS



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

TELS. WO 2-4155
WO 3-6925

RELEASE NO: 66-247

FOR RELEASE: IMMEDIATE
September 8, 1966

Also released in
Cambridge, Mass.

KOCK RESIGNS,
ELMS NAMED
ERC DIRECTOR

CAMBRIDGE, Mass. -- Dr. Winston E. Kock, first Director of the National Aeronautics and Space Administration's Electronics Research Center here, has resigned to return to private industry.

James C. Elms, NASA's Deputy Associate Administrator for Manned Space Flight, has been named Director by Administrator James E. Webb.

The changes are effective October 1.

Dr. Kock has been the ERC Director since the Center was formally established Sept. 1, 1964 to pioneer work in space and aeronautical electronics. Previously he was Vice President-Research of the Bendix Corporation, Detroit. He returns to Bendix as Vice President and Chief Scientist and will serve as a member of the Administration Committee.

Mr. Elms joined NASA Sept. 1, 1965 as the Deputy Associate Administrator for Manned Space Flight.

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9/8/66

Previous to this appointment Mr. Elms was Vice President and General Manager of the Space and Information Systems Division, Raytheon Company, Sudbury, Mass. Before his association with Raytheon he was the Deputy Director of the Manned Spacecraft Center, Houston, from February 1963 to March 1964, charged with responsibility for general management of the Center.

He has served in key management roles at North American Aviation in the development of fire control and radar bombing systems and at the Denver Division of the Martin Company on the Titan I missile. Later, he was Executive Vice President of the Crosley Division of Avco, and after his position with Avco, he was the Director of Space and Electronics for the Ford Motor Company's Aeronutronic Division.

Mr. Elms received his B.S. degree in physics from the California Institute of Technology and his M.A. degree in physics from the University of California at Los Angeles, where he was a member of the faculty as a Research Associate in the Institute of Geophysics.

He served in the Air Force during World War II. At the time he left the Air Force he was head of the Guided Missile Unit of the Armament Laboratory.

A native of East Orange, N.J., Elms was born on May 16, 1916. He is married to the former Patricia Marguerite Pafford of Phoenix, Ariz. The couple has four children: Christopher Michael 21, Suzanne 18, Francesca 16, and Deborah 12. He resides at 67 Maugus Ave., Wellesley Hills, Mass.

Dr. Kock is returning to private industry after guiding the Electronics Research Center through its formative years. Under his direction, the Center has grown from a cadre of 70 persons to a research and administrative staff of 550 including 76 scientists with doctorate degrees.

He has developed an electronics research program which to date has committed over \$8 million in research contracts and grants to the nation's industries and universities. In addition, Dr. Kock has guided the design and construction plans for the \$60 million permanent site of the Center in Kendall Square, Cambridge.

Groundbreaking for the first phase in construction of the permanent site is scheduled in the fall. This first phase will include a 26-story tower building, a 3-story microwave laboratory and a 3-story auditorium-cafeteria building.

Earlier this year, Dr. Kock was awarded the George Washington Medal of the Engineers Club of Philadelphia for his administration of the Center.

Dr. Kock is married and has three children. They reside in Beverly Farms, Mass.

-end-



RELEASE NO: 67-1

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 491-1500, EXT. 227-228

ON OR AFTER

FOR RELEASE: February 9, 1967

NASA-CAMBRIDGE

APPOINTS DR. D. L. WEINBERG

Dr. Donald L. Weinberg has been appointed a physicist in the Space Optics Laboratory at NASA's Electronics Research Center, Cambridge, Mass., it was announced today by Dr. Lester C. Van Atta, Assistant Director for Electromagnetic Research.

Dr. Weinberg joined NASA from Lincoln Laboratory where he had been staff engineer since March 1964. He was a research physicist at Corning Glass Works, Corning, New York, from September 1959 to March 1964.

He received his doctorate from Harvard University in 1959 and held a teaching fellowship there. He also received his master's degree and bachelor's degree from Harvard.

Dr. Weinberg has written a number of technical papers on nuclear magnetic resonance in alloys, small-angle X-ray

scattering, and high power lasers and non-linear optics.

A native of New York City, Dr. Weinberg is married to the former Stephanie Grant and they live at (67 Emerson Gardens), Lexington, Mass.

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RELEASE NO: 67-2

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 491-1500, EXT. 2227-228

FOR RELEASE: ON OR AFTER
February 20, 1967

J. P. ANDERSEN JOINS

NASA CAMBRIDGE AS

RESEARCH BRANCH CHIEF

James P. Andersen, a former vice president of Dynamics Research Corporation, has joined NASA's Electronics Research Center, Cambridge, Mass., as Chief of the Inertial Sensors Branch of the Guidance Laboratory, it was announced today by James C. Elms, Director of the NASA Electronics Research Center.

For nine years prior to joining NASA, Mr. Andersen was Vice President and General Manager of the Components Division of Dynamics Research Corporation at Stoneham, Mass. From 1949 to 1957 he was a development engineer at the Instrumentation Laboratory of Massachusetts Institute of Technology.

Mr. Andersen was graduated with honors at the University of Colorado in 1949 and took graduate courses at

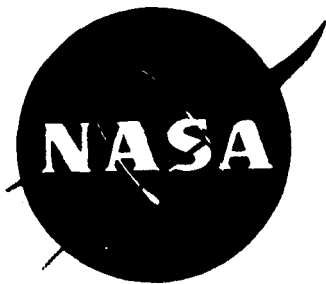
Northeastern University in 1958.

A member of the Institute of Navigation, the American Institute of Aeronautics and Astronautics and several honorary societies, Mr. Andersen has specialized in research on inertial navigation and guidance systems and sensors.

He served in the U. S. Navy from 1943 to 1946 as a carrier fighter pilot with the rank of ensign.

Mr. Andersen is married to the former Bernice Ballem. They have five children and live at (20 Brooksweld Road) Canton, Massachusetts. His father, Walter Andersen, lives at Battleground, Washington.

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RELEASE NO: 67-3

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 491-1500, EXT. 227-228

FOR RELEASE: ON OR AFTER
February 27, 1967

J. M. BAYNE NAMED CONSTRUCTION CHIEF

AT NASA CAMBRIDGE RESEARCH CENTER

James M. Bayne has been appointed Chief of the Construction Projects Office at NASA's Electronics Research Center, Cambridge, Mass., it was announced today by James C. Elms, Director of the Center.

In his new position, Mr. Bayne will supervise construction of the Center's multi-million dollar permanent site, already under way, at Kendall Square, Cambridge. First phase of building construction will include a 26-story tower building, a three-story Microwave Laboratory, a three-story auditorium-cafeteria building, and support facilities.

Mr. Bayne joined the Electronics Research Center from the space agency's Manned Spacecraft Center, Houston, Texas, where he had been Chief of the Facilities Program Office for the past 18 months.

In September 1961 he joined NASA at Houston as Chief Architect of the Manned Spacecraft Center. He was responsible for site design, future planning and financial requirements.

He formerly was a structural engineer from 1951 to 1953 and an architect and project director from 1955 to 1961 for Smith, Hinchman & Grylls, Detroit, Michigan. Concurrently, from 1956 to 1961, he taught art and architectural design at the Detroit Institute of Technology.

Mr. Bayne received a superior achievement award at Manned Spacecraft Center in recognition of his outstanding contribution to the manned spaceflight program. He also received a group achievement award there in 1964. Several of his projects, while with Smith, Hinchman & Grylls, received awards from the University of Michigan for design and site planning.

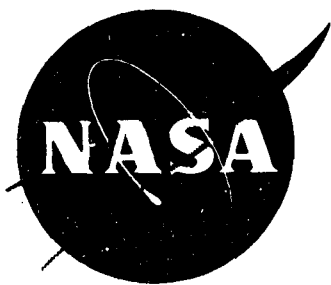
He received a bachelor's degree in architectural engineering from the University of Illinois in 1951 and later attended the University of Miami and Lawrence Institute of Technology, Detroit. He served in the Army

with the Corps of Engineers from 1953 to 1955.

Mr. Bayne is a registered architect in Illinois, a member of the American Institute of Architects, and the Texas Society of Architects.

A native of Piggott, Arkansas, Mr. Bayne lives with his wife and two daughters at (14 Longmeadow Road) Medfield, Mass.

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RELEASE NO: 67-5

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 491-1500, EXT. 227-228

FOR RELEASE:

THURSDAY AM's
MARCH 23, 1967

NASA'S DR. ALBERT J. KELLEY

NAMED A BOSTON COLLEGE DEAN

Dr. Albert J. Kelley, Deputy Director of NASA's Electronics Research Center, Cambridge, Mass., has accepted appointment as Dean of the College of Business Administration, Boston College, it was announced today. Electronics Research Center's Director, James C. Elms, simultaneously announced Dr. Kelley's resignation from NASA. The changes become effective June 1.

He will continue as a special consultant to NASA.

NASA Administrator, James E. Webb said:

"Dr. Kelley has left an indelible mark on NASA.

The very existence of the Electronics Research Center is in large measure due to his dedication and drive to improve the nation's competence in space.

"We were fortunate in having his foresighted planning and boundless energies devoted to the nation's growing electronics needs in space and aeronautics since 1960.

"I am pleased he has consented to remain available as a consultant."

Dr. Kelley was assigned to NASA while a career Naval officer on detached duty in 1960 to set up a development program for the Agena launch vehicle. He was named, a year later, to establish NASA's research program in electronics and control and was appointed director of that division.

Dr. Kelley, in 1963, was assigned additional duties as manager of the Electronics Research Task Group. This was the group which formulated plans for the Electronics Research Center at Cambridge, Mass. He became Deputy Director of the Center in 1964 and continued in that position after retiring from the Navy in 1965.

Dr. Kelley is holder of a doctor of science degree from Massachusetts Institute of Technology and is a graduate of the U. S. Naval Academy, Annapolis.

During his service in the Navy, he was a shipboard officer, carrier pilot and test pilot in experimental flights

of early jet fighter planes. He was a project manager for the Eagle missile and supervised systems engineering of air-to-air missiles with fighter aircraft.

Dr. Kelley becomes the first layman to serve as dean of the school, which has an enrollment of 1,800 students. He succeeds Acting Dean Rev. Alfred Jolson, S.J., who held the interim post after the promotion of Rev. W. Seavey Joyce, S.J., to Vice President to Boston College.

He is a member of several honor societies, a Fellow of the Institute of Electrical and Electronic Engineers, an Associate Fellow of the American Institute of Aeronautics and Astronautics, and a vice-president of the Armed Forces Communications and Electronics Association.

Author of numerous professional articles, Dr. Kelley, 42, is a native of Boston and now resides in Milton, Mass.



RELEASE NO: 67-6

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 491-1500, EXT. 227-228

FOR RELEASE:

IMMEDIATE

March 29, 1967

NASA-SPONSORED SEMINAR ON COMPUTER-AIDED DESIGN

A two-day seminar on Computer-aided Circuit Design, sponsored by the Qualifications and Standards Laboratory of NASA's Electronics Research Center, Cambridge, Mass., will be held April 11 and 12 at Massachusetts Institute of Technology.

Chairman of the seminar is Robert L. Trent, Chief of the sponsoring NASA laboratory. Director James C. Elms of the Electronics Research Center will welcome the participants at the opening session.

The keynote address on April 12 will be delivered by Lt. Col. Daniel J. Walsh of the Office of Chief of Research and Development, Department of the Army.

Program Chairman is John A. Dumanian of the NASA Qualifications and Standards Laboratory.

Session chairmen are: Dr. David Van Meter, Chief of

the NASA center's Computer Research Laboratory; Allan F. Malmberg of the Los Alamos Scientific Laboratory; Gene A. Vacca of NASA's Office of Advanced Research and Technology; and J. Francis Reintjes of MIT's Electronic Systems Laboratory.

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NEWS



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

TELS. WO 2-4155
WO 3-6925

FOR RELEASE: IMMEDIATE
June 12, 1967

RELEASE NO: 67-155

NASA AWARDS

MIT CONTRACT

ON GUIDANCE

The National Aeronautics and Space Administration's Electronics Research Center, Cambridge, Mass., announced today the award of a \$7.9 million contract to the Massachusetts Institute of Technology for research and development of high performance gyroscopes and accelerometers.

Technology resulting from this research effort is expected to contribute to the evolution of precision instruments to guide and control the vehicles planned for the complex aeronautical and space missions of the 1970s and 1980s.

It is anticipated that these instruments will make possible systems which will navigate advanced supersonic transports with sufficient precision to intercept runway landing beams without the aid of present radio aids; to provide highly precise pointing references for satellites; and to guide interplanetary vehicles on missions lasting a year or more.

-more-

6/12/67

The NASA contract will be performed over a three-year period by MIT's Instrumentation Laboratory which is under the direction of Dr. C. Stark Draper. This laboratory pioneered development of the gyroscopes and accelerometers which led in 1953 to the first successful coast-to-coast flight of an aircraft guided and navigated without assistance from pilots or radio aids.

The laboratory also developed the guidance and navigation systems for NASA's Apollo program and numerous systems for ballistic missiles, aircraft and submarine applications. The NASA contract will provide an extension to the inertial sensor technology that has contributed effectively to the success of the above national programs.

-end-



RELEASE NO: 67-22

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 491-1500, EXT. 227-228

IMMEDIATE

FOR RELEASE: July 3, 1967

DR. F. C. SCHWARZ

NAMED LAB CHIEF

AT NASA-CAMBRIDGE

Dr. Francisco C. Schwarz has been appointed Chief of the Power Conditioning and Distribution Laboratory at NASA's Electronics Research Center, Cambridge, Mass., it was announced today by Director James C. Elms.

Dr. Schwarz had been Acting Chief of the Laboratory, which has among its objectives research programs to find new methods of technology to increase the capabilities of electronic systems for future, longer space missions. The laboratory is part of the Electronic Components Division, headed by Assistant Director W. Crawford Dunlap.

Dr. Schwarz joined NASA in 1965. Previously he had been associated with the General Electric Laboratories,

-more-

Ithaca, New York, since 1959. While there, he contributed to the development of advanced power systems for military and aerospace technology.

He received a doctorate in Electrical Engineering from Cornell University in 1965. His dissertation, "A Class of Nonlinear Active Filters with Application to Electric Energy Conversion," was based on work for the U. S. Army and established the foundation for a rigorous mathematical treatment of nonuniform and aperiodic sampling applied to pulse modulation processes.

He received his master's degree in 1956 from Columbia University and received his undergraduate education at the Technical University of Delft, The Netherlands.

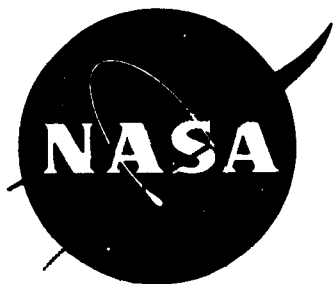
He lectured on the subject of magnetics at Columbia and served both as a consultant and consulting engineer at the Electronic Research Center at Cornell.

Dr. Schwarz has published numerous technical papers on electronics system theory, and the application of control theory and applied mathematics to modern electrical power engineering. He also holds several patents on basic innovations in the field of solid state power systems.

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He is a member of the Institute of Electrical and Electronic Engineers and the Research Society of America and serves in a leading function in the Interagency Advanced Power Group.

Dr. Schwarz and his family live at (14 Raymond St.) Concord, Massachusetts.



NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 491-1500, EXT. 227-228

FOR RELEASE:

PM's MONDAY

July 10, 1967

ERC

RELEASE NO: 67-20

NORTH ATLANTIC TRAFFIC STUDY

SOUGHT BY NASA-CAMBRIDGE;

12 COMPANIES BID ON CONTRACT

NASA's Electronics Research Center, Cambridge, Mass., has received bids from 12 companies interested in conducting research on a satellite system to provide more efficient navigation and air traffic control for aircraft and ships in the North Atlantic Ocean area in 1975.

Objective of the eight-month study is to identify the technological requirements for implementing such a system. The system would include one or more orbiting satellites which would relay data to equipment on board the ships and planes and ground stations.

The system would provide for:

- Determination of position by an aircraft
- Assurance that aircraft flight paths would be safely separated

-more-

- Voice and data communications
- Air-sea rescue
- Aid to collision avoidance
- Transmission of advisories such as weather and
oceanographic information

NASA said the North Atlantic Ocean is the area of primary concern because it is estimated that at peak hours in 1975, a total of 190 aircraft would be crossing that area. By 1980, the number of planes would increase to 225 and double to 450 by 1990.

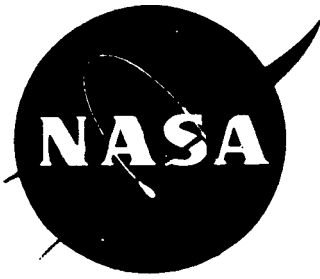
The contractor must include consideration of satellite structure, size, weight, instrumentation, power, heat, stabilization problems, launch requirements. As a guideline, NASA suggested that the cost of equipment on board the plane or ship not exceed \$5,000 in order to provide the benefits of the system to small commercial vessels as well.

The 12 companies responding to the request for proposals were Adcom, Inc., Cambridge; Communications Systems, Falls Church, Va.; Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.; Cubic Corp., San Diego, Calif.; General Electric Company, Schenectady, N.Y.; Hughes Aircraft Company,

-more-

El Segundo, Calif.; Lockheed Missiles & Space Company,
Sunnyvale, Calif.; Martin Company, Orlando, Fla.; RCA,
Moorestown, N. J.; TRW Inc., Redondo Beach, Calif.;
Westinghouse Electric Corp., Baltimore, Md.; and ITT Federal
Laboratories, Nutley, N. J.

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RELEASE NO: 67-26

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 491-1500, EXT. 227-228

FOR RELEASE: IMMEDIATE
July 21, 1967

DR. THOMAS L. ALTSHULER

JOINS NASA-CAMBRIDGE

Dr. Thomas L. Altshuler has been appointed Senior Scientist in the Qualifications and Standards Laboratory at NASA's Electronics Research Center, Cambridge, Mass.

Dr. Altshuler joined NASA from the G.C.A. Corporation in Bedford, Mass. where he was a Staff Scientist. He was formerly an Associate Professor at Dartmouth College in Hanover, N.H., a Post Doctoral Fellow at the University of Pennsylvania in Philadelphia, Pa., an Engineer for the General Electric Company at Ithaca, N.Y., and an Engineer for the Radio Corporation of America in Harrison, N.J.

Dr. Altshuler served as an officer in the U. S. Navy from 1951 to 1954.

In 1964 Dr. Altshuler was awarded his Doctorate at the University of Oxford, Oxford, England. He received his Masters degree at Columbia University in New York City in 1956, and his

-more-

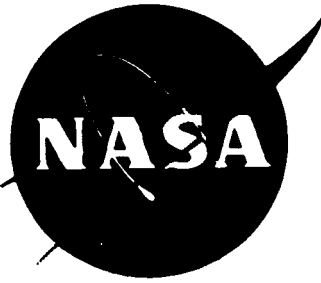
Bachelor's degree at the University of California in 1951.

Dr. Altshuler has written and published many technical papers, most of which are in his specialized field, dislocations and their effect on the mechanical properties of materials. He also has several patents pending on electronic devices.

Dr. Altshuler is a member of the Institute of Metals, the American Institute of Mining, Metallurgical, and Petroleum Engineers, and the American Society of Metals.

Dr. Altshuler makes his home with his wife and four children in West Concord, Mass.

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RELEASE NO: 67-27

EPC

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 491-1500, EXT. 227-228

FOR RELEASE: IMMEDIATE
July 25, 1967

FOUR NEW SCIENTISTS FOR
COMPONENT TECHNOLOGY LABORATORY
AT NASA-CAMBRIDGE

Four scientists have joined the Component Technology Laboratory of NASA's Electronics Research Center, Cambridge, Mass. it was announced today. They are Drs. David Eagles, Leonard Feinstein, Imdad Khan, and Jordan Kirsch.

Dr. Eagles, of the Post Office Research Station, London, England, is on appointment as a National Academy of Sciences Post-Doctoral Fellow to work in the Advanced Research Branch of the Laboratory.

Dr. Feinstein is in the Physical Electronics Branch of the Laboratory studying problems of surfaces, using the technique of low energy electron diffraction. He was formerly a research scientist in the Nationale de la Recherche Scientifique. Dr. Feinstein received his doctorate from the Massachusetts Institute of Technology in 1965.

-more-

Dr. Khan, of the Microelectronics Branch of the Laboratory, formerly worked in research laboratories of the General Telephone and Electronics Corporation. Dr. Khan received his doctorate in 1959 from Imperial College, London, England.

Dr. Kirsch, of the laboratory's Advanced Research Branch, was formerly associated with Bell Telephone Laboratories where he engaged in research of solid state plasmas in metals. He received his doctorate from Columbia University in New York City in 1962.

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RELEASE NO: 67-30

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 491-1500, EXT. 227-228

FOR RELEASE: IMMEDIATE
July 28, 1967

R. T. MINKOFF JOINS

NASA-CAMBRIDGE

Robert T. Minkoff has been appointed to the staff of the Microwave Laboratory at NASA's Electronics Research Center in Cambridge, Mass. it was announced today.

Mr. Minkoff came to NASA from the Mitre Corporation in Bedford, Mass. where he has been on the Technical Staff since 1964. Prior to that, 1958 to 1964, he was a Research Electrical Engineer at Battelle Memorial Institute in Columbus, Ohio.

Mr. Minkoff attended Ohio State University and received his master's degree in Electrical Engineering in 1963. He received his bachelor's degree in Electrical Engineering from Columbia University of New York City in 1955.

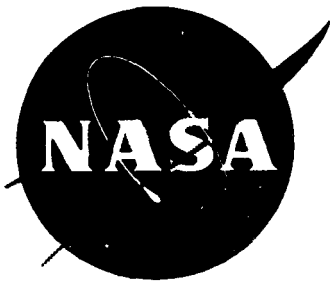
Mr. Minkoff served as an officer in the U.S. Navy from 1955 to 1958.

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Mr. Minkoff's specialized field of research is Systems Analysis. He is a member of the Institute of Electrical and Electronics Engineers.

Mr. Minkoff resides in Newton Highlands with his wife and two children.

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RELEASE NO: 67-31

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 491-1500, EXT. 227-228

FOR RELEASE: THURSDAY AM's
August 17, 1967

134 SUMMER EMPLOYEES

AT NASA-CAMBRIDGE

A total of 134 persons, including high school youngsters, college students, and adults, are being employed for the summer at NASA's Electronics Research Center, Cambridge, Mass., under five different federal programs, it was announced today by Director James C. Elms.

Most of the high-school age youngsters are from Cambridge. They are assigned a variety of clerical and administrative tasks in the research laboratories and the supporting organizations.

Twenty youngsters are enrolled in the NASA Center's Youth Opportunity Campaign. This number exceeds the ratio established by President Johnson who requested that each government installation employ one such youngster for each 100 permanent employees. The Cambridge Center has

-more-

713 permanent employees.

The Neighborhood Youth Corps, a program administered by the Department of Labor which seeks to place youngsters in positions where they can learn a marketable skill, has assigned 13 enrollees to NASA.

Enrollees in the Neighborhood Youth Corps and the Youth Opportunity Campaign are employed for up to 40 hours a week during the summer and up to 16 hours weekly during school months.

The NASA Center has 39 participants in a College Work Study Program which assists college undergraduates who need financial aid to continue their education. The students are furnished by Boston College, Harvard University, Northeastern University, Boston University and Radcliffe College.

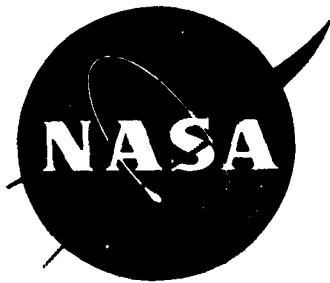
Four Cambridge adults are employed for the summer under the Work Experience Program which is administered by the Health, Education and Welfare Department. The program provides up-dating of outmoded skills and training in new ones.

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The Job Corps has provided the NASA Center with three graduates who are accumulating on-the-job experience to ready them for permanent full-time positions.

The balance of the Center's summer work force comes from its own program of hiring 90-day appointees mostly college graduate students assigned principally to the research areas. A total of 55 such employees are at work this summer.

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RELEASE NO: 67-33

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 491-1500, EXT. 227-228

FOR RELEASE: Immediate
August 23, 1967

DR. ALFRED LANDMAN

JOINS NASA-CAMBRIDGE

Dr. Alfred Landman has been appointed Research Physicist in the Component Technology Laboratory at the NASA Electronics Research Center in Cambridge, Mass., it was announced today.

Dr. Landman was a Research Engineer at General Telephone and Electronics Laboratories of Bayside, N.Y. from 1965 to 1967. Prior to that, he was a Research Associate at the University of Chicago in Illinois, and a Research Physicist at Columbia University in N.Y. From 1958 to 1962 he was a lecturer in physics at Brooklyn College in N.Y. Dr. Landman has also held summer positions at North American Aviation in Canoga Park, California in 1956, at Brookhaven National Laboratory in Upton, N.Y. in 1954, and at Johnsville NADC in Johnsville, Pa. in 1953.

In 1954 Dr. Landman received his bachelor's degree from the University of Pennsylvania, Philadelphia, Pa., where he had a full-tuition scholarship, received Pi Mu Epsilon, Phi Lambda Upsilon, and Alpha Epsilon Delta honors, and was a member of the Tau Delta Phi fraternity. Dr. Landman earned his master's degree in 1954 and his doctorate in 1963, both from Columbia University in New York. At Columbia he received Sigma Xi honors.

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Dr. Landman has specialized in atomic physics, spectroscopy, molecular spectroscopy, electro-optics, and lasers. He has published several technical papers in these fields. He is a member of the American Physical Society, the Scientific Research Society of America, and the New York Academy of Sciences.

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IN REPLY REFER TO:

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

W. F. Mackie, Chief
Tech Liaison Office
894-2400 Ext 237

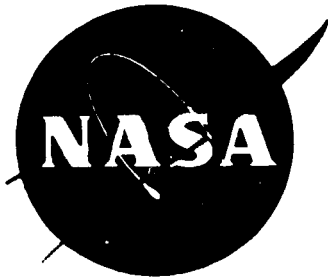
ARMY ENGINEERS ISSUE INVITATION TO CONSTRUCTION INDUSTRY TO
BID ON NASA-ELECTRONICS RESEARCH CENTER AT CAMBRIDGE, MASS.

FOR RELEASE FRIDAY, SEPT 22, 1967, 12:01 A.M. EDST

WALTHAM, MASSACHUSETTS -- More than 2000 major construction and supply firms in the U. S. received invitations today from the Corps of Engineers to bid on the second phase of the National Aeronautics and Space Administration's Electronics Research Center at Kendall Square, Cambridge, Massachusetts. The first phase was the placing of foundation pilings.

The construction package, for which funds were appropriated by Congress during Fiscal Years 1965 and 1966, will include three brick-faced buildings; one at least 10 stories high to house laboratories, offices and cafeteria; a 350-seat auditorium; and a center support building for service utilities; and driveways, parking areas, grading and related items.

Colonel Remi O. Renier is Division Engineer for the Army Corps of Engineers in New England, which serves as the construction contracting agency for NASA-ERC. James C. Elms is Director of the NASA Center. The Center has been in operation since September 1, 1964, in temporary quarters at Technology Square near the permanent site in Kendall Square.



NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 494-2227

FOR RELEASE: FRIDAY AM's
November 24, 1967

RELEASE NO 67-39

NASA-CAMBRIDGE PROJECT MAY AID DEAF

CAMBRIDGE, MASS. - A National Aeronautics and Space Administration research effort to employ voice commands for spaceborne computers may be of value in developing a device for teaching deaf persons to speak more clearly.

The research was performed under contract to NASA's Electronics Research Center, Cambridge, Mass., by Dr. Huseyin Yilmaz, a program director at Arthur D. Little Inc., Cambridge.

Dr. Yilmaz built an electronic machine, based upon an analysis of human speech, that permits spoken word profiles to be visually displayed on a small oscilloscope.

Based on this project and similar studies, NASA scientists hope to categorize and encode speech patterns. The objective is to see if instruments can be developed which would permit, for example, an astronaut to maneuver

-more-

his spacecraft with a voice command.

Dr. Yilmaz' associates experimented with his machine on a group of deaf and partially deaf children in Lexington and several deaf adults, all of whom had been receiving other types of speech training. The machine also was used to advantage in a class of retarded children and in the case of a high school youth who stuttered severely.

A totally deaf adult who had never been able to produce the sound of a broad "a" correctly was able to do so after only 10 minutes of practice with the machine.

A 13-year-old student in the class for retarded children was able for the first time to produce three vowel sounds after experimenting with the device.

Another student, through use of the machine, was able to condition himself to pronounce a word correctly on which he had always stuttered.

When a subject speaks a single vowel sound into a microphone, the analyser causes an electronic dot to move to a certain sector of the display screen. Dr. Yilmaz had preassigned each sector of the screen to a certain vowel.

-more-

By actually "seeing" his own voice, in the movement of the dot to a specific area of the screen, a subject was able to correct his own speech defect after a short practice session.

"The machine motivates the subject, defines a target to aim at, and provides an undelayed feedback," Dr. Yilmaz said. He added that when sufficient progress is made in displaying consonants, a "valuable tool will be at hand for a fresh approach" to speech therapy.

The NASA has taken steps to spread the word about the experiment to interested parties. It is hoped that organizations or foundations working with the deaf will explore further the possibilities of making the device a useful teaching tool. It is known that a number of laboratories are performing research into this area.

Dr. Yilmaz' work on computer voice commands was conducted under contract to the Electronics Research Center's Computer Research Laboratory. The project was directed by NASA scientist John C. Kotelly as a part of his in-house research into topological perception theory.

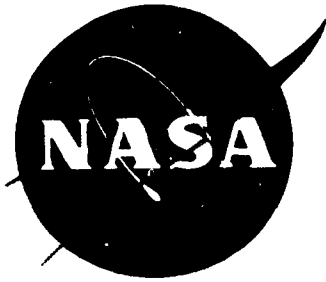
Dr. Yilmaz was assisted in the speech therapy

-more-

portion of his work by William Benninghof of the Speech Communication Center at Northeastern University. He is exploring the Yilmaz theory for his doctoral dissertation under a NASA fellowship.

The experiments with the Lexington School children were conducted with cooperation of Sal Pace, Speech and Hearing Consultant to the Lexington Public Schools.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 494-2227

FRIDAY AM's

FOR RELEASE: December 22, 1967

RELEASE NO: 67-43

NASA-CAMBRIDGE AWARDS NAVIGATION SATELLITE STUDY
CONTRACTS

The National Aeronautics and Space Administration has awarded two contracts totaling \$198,521 to two companies for research on a satellite system to provide more efficient navigation and air traffic control for aircraft and ships in the North Atlantic Ocean area in 1975.

The awards were made by NASA's Electronics Research Center, Cambridge, Mass., to TRW Inc. of Redondo Beach, Calif., for \$99,151, and to Radio Corporation of America, Camden, N.J., for \$99,370.

Both companies will conduct eight-month studies to determine the most promising technical approach to implementing such a system. Related problems and requirements will be identified.

The system would include orbiting satellites that

-more-

would relay data between ground stations and the planes and ships.

The system would provide for:

- Determination of position by aircraft and ships.
- Independent position surveillance of trans-Atlantic traffic by control centers.
- Voice and data communications.
- Air-sea rescue.
- Aids to collision avoidance.
- Transmission of advisories such as weather and oceanographic information.

NASA pointed out that the North Atlantic Ocean is considered of primary concern because it is estimated that at peak hours in 1975, as many as 190 aircraft will be enroute at one time. By 1980, the number of aircraft would increase to 225 and double to 450 by 1990.

The contractors were asked to include consideration of satellite structure, size, weight, instrumentation, power, heat, stabilization problems, orbits and launch requirements.

NASA suggested that the cost of equipment on board

the plane or ship be held to a maximum of \$5,000 so small vessels could benefit.

These studies will lead to the proposal of satellite experiments and supporting research.

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RELEASE NO: 68-1

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 494-2227

FOR RELEASE: ON OR AFTER
January 4, 1968

WEDAN NAMED NASA-CAMBRIDGE LAB CHIEF

Robert Wedan has been appointed Chief of the Guidance Laboratory at NASA's Electronics Research Center, Cambridge, Mass., it was announced by Director James C. Elms.

The Guidance Laboratory is one of two in the Guidance and Control Research area headed by Dr. Richard J. Hayes, an Assistant Director of the Center. The two laboratories conduct research on new sensors and techniques for improving navigation on future spacecraft and aircraft.

Prior to his new appointment, Mr. Wedan was Chief of the Laboratory's Guidance Systems Branch and was responsible for planning and managing research programs in inertial systems, navigation techniques, hybrid navigation and guidance systems.

Mr. Wedan joined NASA in June 1966. Before that he had been employed at Honeywell Inc., since 1953.

He served as head of advanced technical planning for

-more-

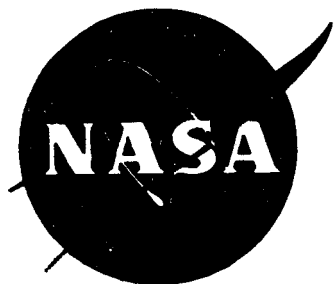
Honeywell-St. Petersburg where he was responsible for planning research and development technology.

At Honeywell-Minneapolis he was Manager for CENTAUR Inertial Guidance Program with responsibility for engineering, initial production and subcontracting; also, technical direction of system, Inertial Measuring Unit, and electronic package design and computer specifications.

Mr. Wedan graduated from the Massachusetts Institute of Technology with a S.B. and a S.M. (Honors Group) in 1952.

Born in Duluth, Minn., he lives now with his wife and three children at Lynnfield, Mass.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 494-2227

FOR RELEASE: ON OR AFTER
February 11, 1968

RELEASE NO: 68-2

D. M. POWERS JOINS NASA-CAMBRIDGE

Donald M. Powers has joined NASA's Electronics Research Center, Cambridge, Mass., as Chief of the Microwave Systems Branch and Special Assistant to the Assistant Director for Systems, it was announced today by Director James C. Elms.

Before joining NASA, Mr. Powers was president of General Electronic Laboratories Inc., Boston. Before that, he was vice president of Electro-Mechanical Research Inc., Sarasota, Florida.

He is a former department manager at Martin-Marietta, Orlando Division, Orlando, Fla., and former general manager of the Laboratory for Electronics, Inc., Boston.

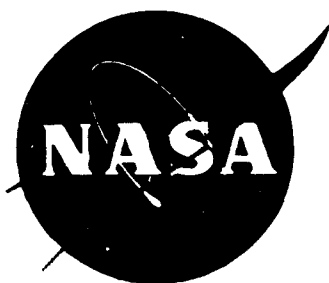
Mr. Powers graduated from Massachusetts Institute of Technology in 1949 with a Professional Degree in Electrical Engineering. He previously had received a bachelor's and master's degree from MIT and for a time was an assistant instructor there.

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He has written a number of technical papers on his research specialties, microwave antennas and components, communications, spacecraft electronics and educational systems. He holds U.S. patents on high power magnetron and a frequency shift keying method.

A native of Philadelphia, Mr. Powers now lives at (125 Spring St.) Marshfield, Mass., with his wife and four children.

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NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ELECTRONICS RESEARCH CENTER

575 TECHNOLOGY SQUARE, CAMBRIDGE, MASSACHUSETTS 02139

TELEPHONE: 494-2227

FOR RELEASE: TUESDAY AM's
February 13, 1968

RELEASE NO: 68-3

NASA-BELL LAB SCIENTISTS MEASURE LASER LIGHT

CAMBRIDGE, MASS. -- An electronic yardstick using a laser light may lead to unprecedented accuracy in measuring the vast distances of space.

Scientists at the National Aeronautics and Space Administration (NASA) and at Bell Telephone Laboratories measured the frequency of laser light with such accuracy that they saw the experiments as a major step toward a new measurement of the speed of light, a fundamental physical constant.

Although ordinary light consists of electromagnetic radiation similar to radio waves, it has been impossible to measure the frequencies of light waves because they are so high.

As a step toward solving this problem, the NASA-Bell team set up a water vapor laser whose frequency lies in the infrared light which is intermediate between ordinary light and radio waves.

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The laser is an electronic device which amplifies light and emits it in a narrow beam.

In the experiments, radio waves from a laboratory microwave source were directed on to a crystal detector similar to those used in the early crystal radio receivers.

The crystal produced overtones of this radiation, just as a violin string produces overtones of its basic tone.

One of the high overtones was mixed electronically with the pencil-thin beam of light emitted from the laser and this produced a beatnote, or synchronous note, within the range of a short-wave receiver. The beatnote was amplified and its frequency precisely measured.

The laser light wavelength was 1/1000ths of an inch and was measured with an error margin of about 20 parts in a billion.

The experiment was conducted by Dr. Lothar Frenkel and Thomas Sullivan of the Microwave Laboratory at NASA's Electronics Research Center, Cambridge, Mass., and M. A. Pollack and T. J. Bridges of Bell Telephone Laboratories, Holmdel, N. J.

They said the experiment was a "stepping stone" to the

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eventual direct measurement of the frequency of ordinary light.

To make such a measurement would require the mixing of light from lasers of still higher frequency with harmonics (the multiple of a given frequency) of the radiation from lasers whose frequency is already known.

The resultant beatnotes would then be detected in the same manner as the microwave experiment because the laser of known frequency would replace the microwave source.

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TELEPHONE: 494-2227

FOR RELEASE: PM's
June 16, 1970

RELEASE NO: 70-9

NASA-CAMBRIDGE DEVICE STUDIED FOR MINE SAFETY

CAMBRIDGE, MASS. -- A sensor developed for aviation use by the Electronics Research Center of the National Aeronautics and Space Administration is being considered by the Interior Department's Bureau of Mines for use as a mine safety instrument.

The sensor measures air speed at low speeds and was developed primarily for V/STOL (vertical/short take off and landing) aircraft. The unit is intended to measure air speed during hovering and such slow flight operations as vertical descents and landings.

The sensor was developed by Richard J. Miner under direction of William J. Rhine, head of the Electronics Research Center's Aircraft Hazard Avoidance Programs Office.

Mr. Miner said he felt the aircraft air speed sensor could also be used effectively in coal mines to measure the low speed movements of ventilation air.

Such measurement is needed to calculate the volume of fresh air directed to the coal "face" areas of underground

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mines, where adequate ventilation is required to dilute and carry away explosive gas and to control harmful dust.

Another Electronics Research Center program, which uses a laser beam to detect air pollution may be applicable to mine health and safety because it can detect specific contaminants, including flammable and noxious gases, in the air.

In the pollution detection experiments, a pencil-thin beam of laser light has been transmitted over a mile through the atmosphere and returned to a recording device.

The precise amount of laser radiation absorbed by the pollutant is measured by the recording device and used to show the identity and concentration of pollutants in the air.

The capabilities of the air speed sensor were made known to officials of the Bureau of Mines, who agreed that the device was of specific interest and indicated that the Bureau would consider funding research and development toward developing a mine-worthy instrument based on NASA's sensor.

The Bureau noted the provisions of the new Coal Mine Health and Safety Act under which safeguard against hazards in the operation of coal mines is required.

One danger in coal mines is the presence of methane gas, an odorless, colorless, combustible gas, which can become explosive in certain mixtures with air.

The NASA low speed sensor would not detect the methane gas

but would provide an accurate reading of the slow air flow within the mine.

A system of lasers could be used in conjunction with the air speed indicator, to show the quality of air used for ventilation. It could, for example, identify and measure methane gas, carbon monoxide, or carbon dioxide.

The NASA low speed sensor is light, rugged, has no moving parts and no electrical components. Because of these features, it might be possible to develop the indicator for semi-portable or hand-held devices suitable for inspections of specific areas of the mine.

The laser work is conducted by Dr. Philip Hanst, Chief of the Center's Chemical Physics Branch.

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